AMENDMENTS TO THE CLAIMS

1. (Currently amended) A solid-state image pick-up device having a plurality of photoelectric converting devices arranged in a row direction and a column direction orthogonal thereto over a surface of a semiconductor substrate, comprising:

a vertical transfer section for transferring charges ~~a charge~~ from the photoelectric converting devices ~~device~~ in the column direction;

a horizontal transfer section for transferring the charges ~~a charge~~ from the vertical transfer section in the row direction; and

an output section for outputting a signal corresponding to a charge transferred through the horizontal transfer section,

wherein the photoelectric converting device includes a plurality of high-sensitivity photoelectric converting devices arranged like a tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively high sensitivity, and a plurality of low-sensitivity photoelectric converting devices arranged like the tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively low sensitivity,

the high-sensitivity photoelectric converting devices ~~device~~ and the low-sensitivity photoelectric converting devices ~~device~~ are arranged at an equal array pitch in positions shifted by 1/2 of the array pitch from each other in the row direction and the column direction,

the vertical transfer section includes a plurality of vertical transfer channels formed on the semiconductor substrate corresponding to the photoelectric converting devices provided in the column direction, a plurality of vertical transfer electrodes formed to cross each of the

vertical transfer channels as seen on a plane, and a charge reading regions ~~region~~ for reading ~~a~~ ~~charge~~ the charges of the photoelectric converting devices ~~device~~ onto the vertical transfer channels,

each of the vertical transfer channels takes a winding shape extended wholly in the column direction between the photoelectric converting devices,

each of the vertical transfer electrodes takes a winding shape extended wholly in the row direction between the photoelectric converting devices, ~~and~~

the charge reading regions of the photoelectric converting devices which are adjacent to each other in the column direction are formed between the adjacent photoelectric converting devices and the vertical transfer channels which are different from each other,

four vertical transfer electrodes are provided corresponding to one of the photoelectric converting devices adjacent to each other in the column direction,

other four vertical transfer electrodes are provided corresponding to the other of the photoelectric devices adjacent to each other in the column direction,

and

the vertical transfer electrodes are driven by vertical transfer pulses having eight phases.

2. (Canceled)

3. (Currently amended) A solid-state image pick-up device having a plurality of photoelectric converting devices arranged in a row direction and a column direction orthogonal thereto over a surface of a semiconductor substrate, comprising:

a vertical transfer section for transferring charges from the photoelectric converting devices in the column direction:

a horizontal transfer section for transferring the charges from the vertical transfer section in the row direction; and

an output section for outputting a signal corresponding to a charge transferred through the horizontal transfer section,

wherein the photoelectric converting device includes a plurality of high-sensitivity photoelectric converting devices arranged like a tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively high sensitivity, and a plurality of low-sensitivity photoelectric converting devices arranged like the tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively low sensitivity,

the high-sensitivity photoelectric converting devices and the low-sensitivity photoelectric converting devices are arranged at an equal array pitch in positions shifted by ½ of the array pitch from each other in the row direction and the column direction,

the vertical transfer section includes a plurality of vertical transfer channels formed on the semiconductor substrate corresponding to the photoelectric converting devices provided in the column direction, a plurality of vertical transfer electrodes formed to cross each of the vertical transfer channels as seen on a plane, and charge reading regions for reading the charges of the photoelectric conveting devices onto the vertical transfer channels,

each of the vertical transfer channels takes a winding shape extended wholly in the column direction between the photoelectric converting devices,

each of the vertical transfer electrodes takes a winding shape extended wholly in the row direction between the photoelectric converting devices,

the charge reading regions of the photoelectric converting devices which are adjacent to each other in the column direction are formed between the adjacent photoelectric converting devices and the vertical transfer channels which are different for each other, ~~The solid-state image pick-up device according to claim 1, wherein~~

two vertical transfer electrodes are provided corresponding to one of the photoelectric converting devices adjacent to each other in the column direction,

other two vertical transfer electrodes are provided corresponding to the other of the photoelectric converting devices adjacent to each other in the column direction, and

the vertical transfer electrodes are driven by vertical transfer pulses having four phases ~~together with the two vertical transfer electrodes corresponding to other photoelectric converting devices which are adjacent to each other in the column direction~~.

4. (Currently amended) A solid-state image pick-up device having a plurality of photoelectric converting devices arranged in a row direction and a column direction orthogonal thereto over a surface of a semiconductor substrate, comprising:

a vertical transfer section for transferring charges ~~a charge~~ from the photoelectric converting devices ~~device~~ in the column direction;

a horizontal transfer section for transferring the charges ~~a charge~~ from the vertical transfer section in the row direction; and

an output section for outputting a signal corresponding to a charge transferred through the horizontal transfer section,

wherein the photoelectric converting device includes a plurality of high-sensitivity photoelectric converting devices arranged like a tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively high sensitivity, and a plurality of low-sensitivity photoelectric converting devices arranged like the tetragonal grid in the row direction and the column direction orthogonal thereto and serving to carry out a photoelectric conversion having a relatively low sensitivity,

the high-sensitivity photoelectric converting devices ~~device~~ and the low-sensitivity photoelectric converting devices ~~device~~ are arranged at an equal array pitch in positions shifted by 1/2 of the array pitch from each other in the row direction and the column direction,

the vertical transfer section includes a plurality of vertical transfer channels formed on the semiconductor substrate corresponding to the photoelectric converting devices provided in the column direction, a plurality of vertical transfer electrodes formed to cross each of the vertical transfer channels as seen on a plane, and charge reading regions ~~region~~ for reading the charges ~~a charge~~ of the photoelectric converting device onto the vertical transfer channels,

the vertical transfer channel takes such a shape as to connect two winding shapes extended wholly in the column direction between the photoelectric converting devices,

the vertical transfer electrode takes a winding shape extended wholly in the row direction between the photoelectric converting devices, ~~and~~

the respective vertical transfer channels are shared for the transfer of the charges from the high-sensitivity photoelectric converting devices for one column and the transfer of the charges

from the low-sensitivity photoelectric converting devices for ~~one~~ another adjacent column, ~~which is adjacent thereto~~.

two vertical transfer electrodes are provided corresponding to the high-sensitivity photoelectric converting device for one column,

other two vertical transfer electrodes are provided corresponding to the low-sensitivity photoelectric converting device for the other adjacent column, and

the vertical transfer electrodes are driven by vertical transfer pulses having four phases.

5. (New) The solid-state image pickup device according to claim 1, wherein the charge reading regions of the photoelectric converting devices are formed such that the charges of high-sensitivity photoelectric converting devices for two rows can be simultaneously transferred to the horizontal transfer section, or the charges of low-sensitivity photoelectric converting devices for two rows can be simultaneously transferred to the horizontal transfer section.

6. (New) The solid-state image pickup device according to claim 4, wherein the charge reading regions of the photoelectric converting devices are formed such that the charges of high-sensitivity photoelectric converting devices for two rows can be simultaneously transferred to the horizontal transfer section, or the charges of low-sensitivity photoelectric converting devices for two rows can be simultaneously transferred to the horizontal transfer section.

7. (New) The solid-state image pick-up device according to claim 1, wherein the charge reading regions of the photoelectric converting devices which are adjacent to each other in the

row direction are formed between the adjacent photoelectric converting devices and the vertical transfer channels which are different from each other.

8. (New) The solid-state image pick-up device according to claim 4, wherein the charge reading regions of the photoelectric converting devices which are adjacent to each other in the row direction are formed between the adjacent photoelectric converting devices and the vertical transfer channels which are different from each other.